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(56) Documents Cited

GB 2299200 A WO 83/05594 A1 US 4862159 A

(58) Field of Search

UK CL (Edition O) H4R RSX

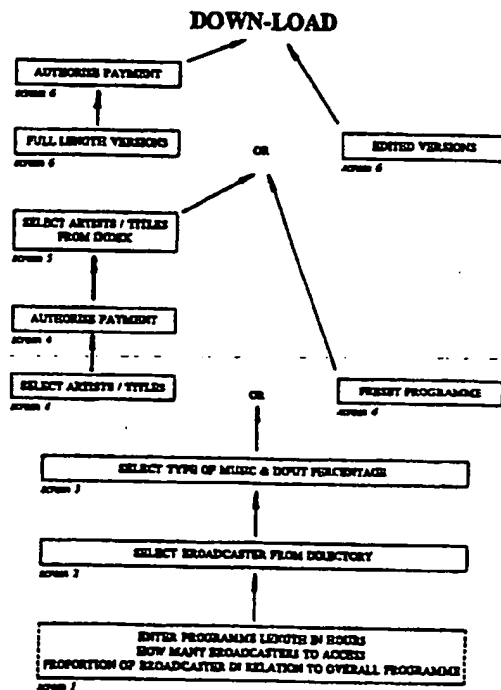
INT CL<sup>6</sup> H04H 7/00

Online:WPI

(54) Software for customised radio program

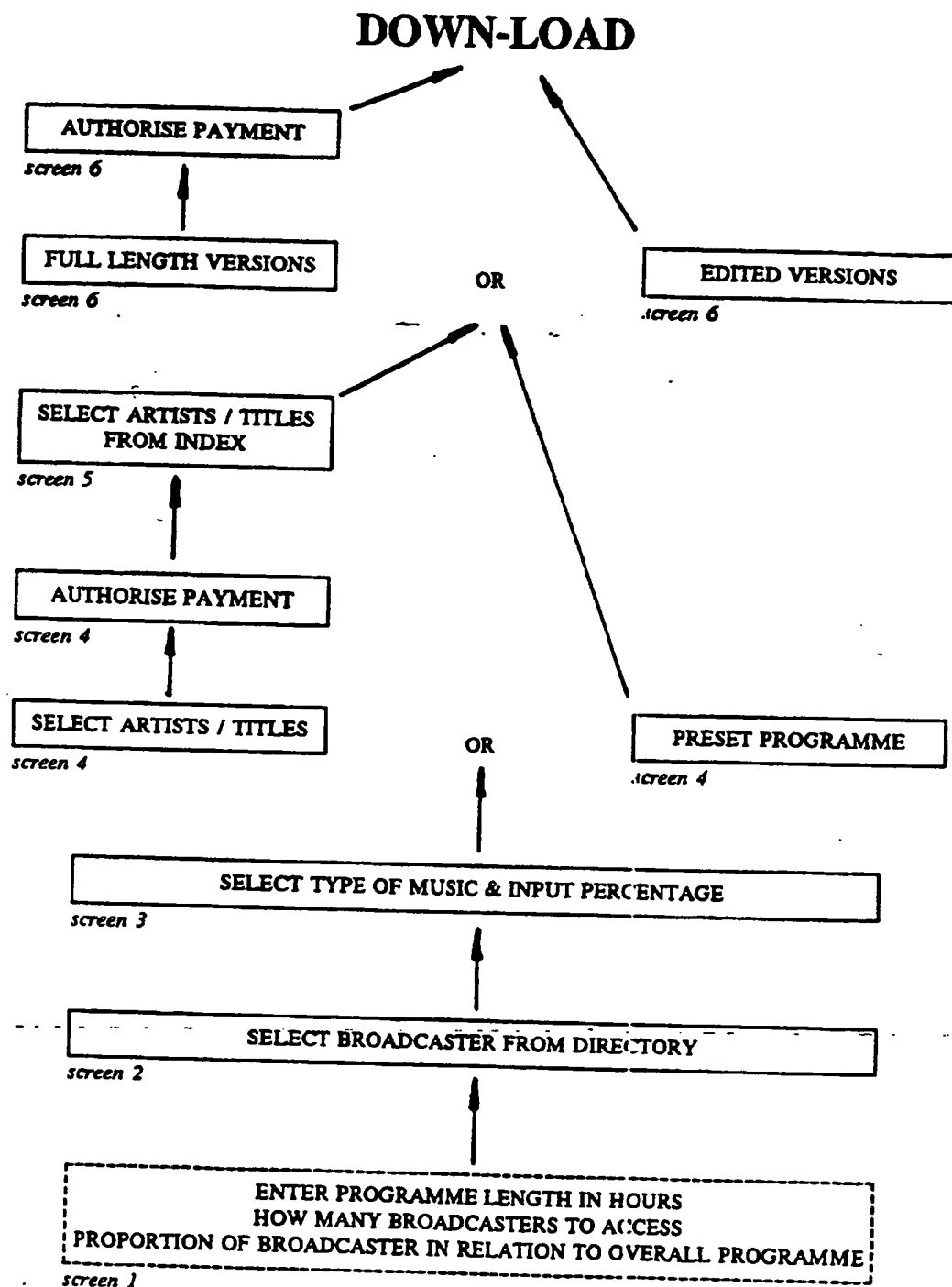
(57) A radio broadcasting system allows each individual radio listener of a group of listeners to compile sp ech, information and music items for a radio programme according to their own taste by accessing different broadcasters' libraries and to have their choices automatically played back in the form of an individually produced radio programme without compromising the desires of other listeners in the audience.

Figure 1

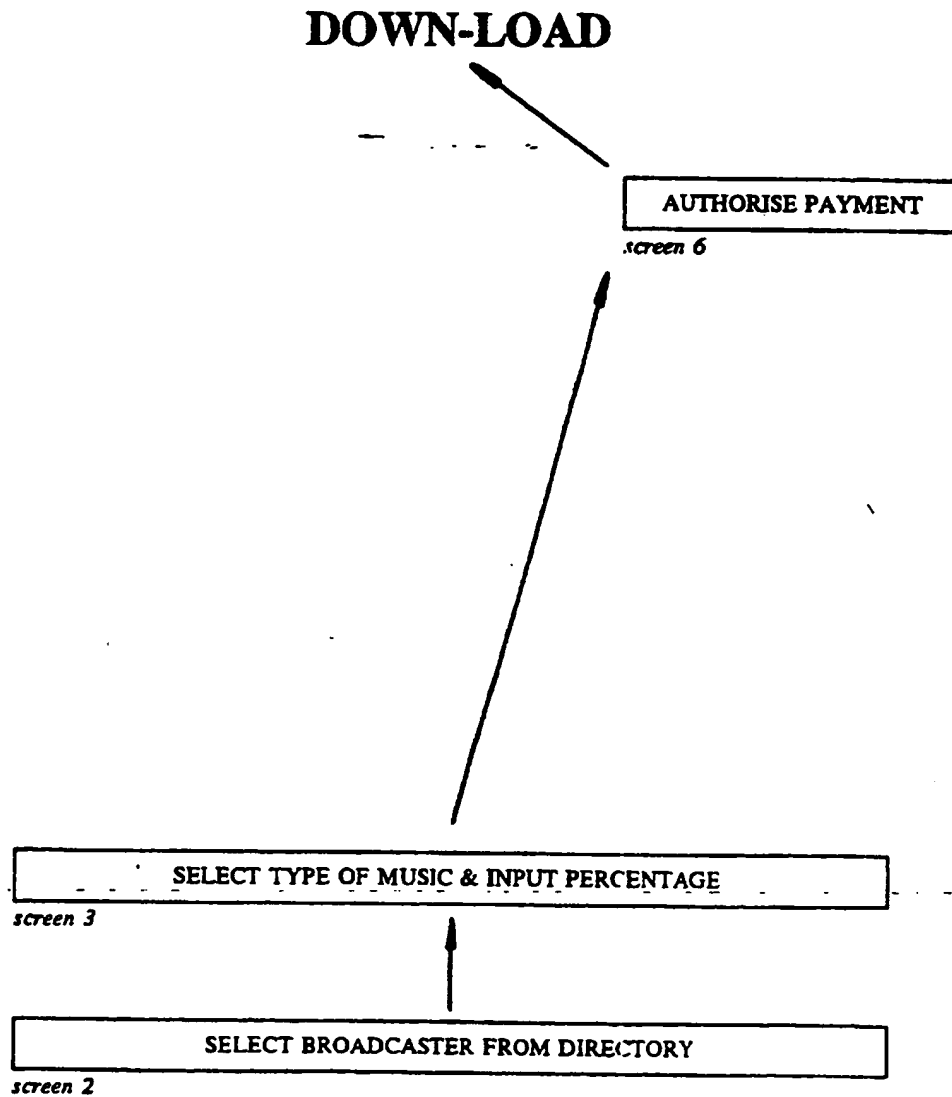


ACCESS MUSIC BROADCASTER

GB 2 306 869 A

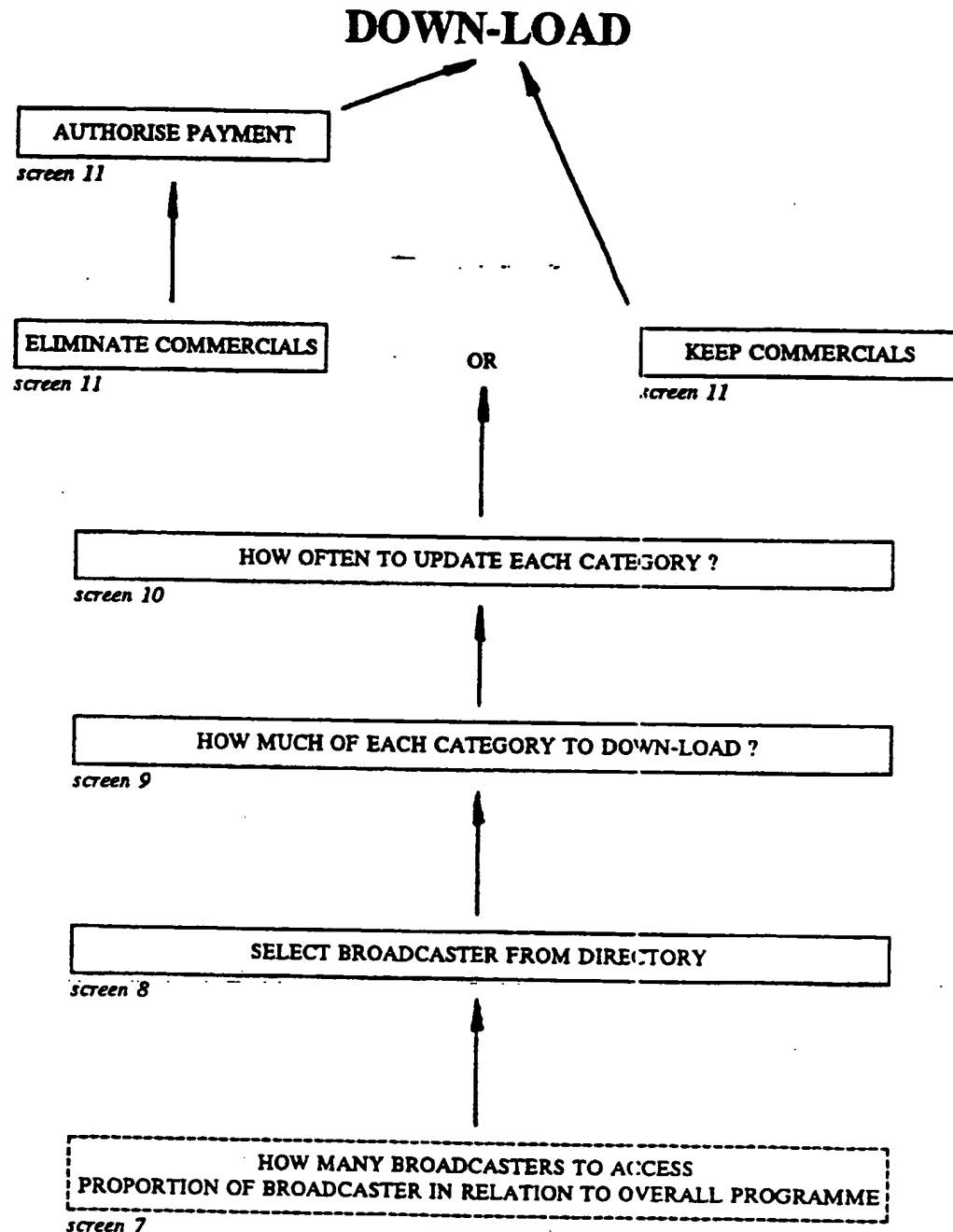
**Figure 1**

**ACCESS MUSIC BROADCASTER**

**Figure 2**

**ACCESS MUSIC BROADCASTER**

**Figure 3**



**ACCESS INFORMATION BROADCASTER**

4/4

**Figure 4**

TIME \ DAY	MO	TU	WE	TH	FR	SA	SU
00:00 - 01:00							
01:00 - 02:00							
02:00 - 03:00							
03:00 - 04:00							
04:00 - 05:00							
05:00 - 06:00							
06:00 - 07:00							
07:00 - 08:00							
08:00 - 09:00							
09:00 - 10:00	A	A	A	A	A		
10:00 - 11:00	A	A	A	A	A		
11:00 - 12:00	A	A	A	A	A		
12:00 - 13:00	A	A	A	A	A		
13:00 - 14:00							
14:00 - 15:00							
15:00 - 16:00							
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17:00 - 18:00							
18:00 - 19:00							
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**LISTENER OPERATED RADIO PROGRAMME SELECTION AND  
ENTERTAINMENT SYSTEM**

**CROSS REFERENCES:** PCT/GB 91/01564  
DE-A-3 836 597  
US-A-3 896 490

This invention relates to a Listener Operated Radio Programme Selection and Entertainment System, abbreviated LORE.

**BACKGROUND OF THE INVENTION:**

- 10 Radio broadcasts are provided for a wide audience. To  
compile an attractive programme, the broadcaster must take  
into consideration the various demands of his audience. By  
doing so he has to compromise and cannot entirely fulfil the  
expectations of the individual listener. By increasing the  
15 numbers of radio stations the listener is supplied with a  
choice of programmes specifically catering for a narrow  
target audience. For example one station providing rock  
music, another providing 1960's pop, classic or jazz music.  
Other channels cater with talk and news-radio for the  
information requirements of other specific target audiences.
- 20 The average radio listener however cannot listen to an  
individually balanced selection of music and speech according  
to his own taste, despite the increasing choice of radio  
channels. For example: if he wants to listen to sport  
25 broadcasts he is also faced with phone-in competitions, if he  
wants to listen to the news he is also subjected to the  
latest stock-market update and if he wants to listen to music  
programmes he cannot receive political interviews during the  
same programme.
- 30 Furthermore if a broadcaster tried to balance such a  
programme for one listener he would compromise the desires of  
other listeners in his audience.

**DESCRIPTION OF RELATED ART:**

- 35 Radio programming systems have been invented to function  
automatically in order to compile a programme schedule and  
automatically play back selected speech and music items  
without the need for a manual operator or programme producer  
characterised in that the selection and compiling of items,  
energising or de-energising of sources and mixing, fading and  
crossfading of items is automatically initiated by the system  
40 in accordance with a preset programme policy through the  
combination of different sensing devices.

Such system according to preamble of Claim 1 is known from PCT/GB 91/01564.

5 Digital and Opto-electronic Radio Library Systems have been invented which can be directly accessed by the broadcast-studio operator. Such a system according to the preamble of Claim 1 is known from DE-A-3 836 597.

#### OBJECTS OF THE INVENTION

10 It is the object of the present invention to provide a novel Radio Programme Selection and Entertainment System which allows each individual radio listener of a group of listeners to compile speech, information and music items by accessing different broadcasters' libraries, down-loading the required items into a personal receiver and automatically processing those single items after transmission by a programme selection system to play back an individual radio programme.

15 The programme selection system described is not dissimilar to PCT/GB 91/01564 and will be integrated into the aforementioned receiver.

#### DESCRIPTION OF THE INVENTION

20 According to the present invention there is provided a Listener Operated Radio Programme Selection and Entertainment System which allows members of radio audiences to listen to programmes which have been individually created according to their own programme policy.

25 By accessing various modern communication networks such as the Internet or digital satellite channels which will link the listener with the broadcaster's public access library, and, if required, also accessing the listener's own record (CD) library the listener will select a variety of programme items which he then down-loads into his radio-receiver which stores those items in a memory such as a computer hard disc.

30

This memory will be the digital equivalent to the tape drives as described in application PCT/GB 91/01564. A revised digital version of the aforementioned application will now select, mix and play-back the items stored in the memory.

35

The fundamental difference however between PCT/GB 91/01564 and the system described here is that the mixing of programme items is initiated in the receiver after the transmission and not in the way of traditional broadcasts prior to transmission in the studio. To achieve this objective, special down-load and interactive pre-select mechanisms have been invented for which protection is sought through this application.

40

### DESCRIPTION OF THE DRAWINGS

A specific embodiment of the invention will now be described by way of example, with reference to the accompanying diagrams.

5 Four diagrams have been attached to describe the Listener Operated Radio Programme Selection and Entertainment System:

Figure 1 shows the selection and down-loading of music through an interactive network (two-way communication)

10 Figure 2 shows the selection and down-loading of music through a non-interactive network (one-way communication)

Figure 3 shows the selection and down-loading of information

Figure 4 shows a timetable for regular broadcasts

### DESCRIPTION OF THE PREFERRED EMBODIMENT

15 Before describing the operation of a Listener Operated Radio Programme Selection and Entertainment System it is necessary to discuss the basic technical requirements to operate such a system.

20 The Radio-Receiver of the Listener Operated Radio Programme Selection and Entertainment System (LORE) as described here will be based upon a standard IBM compatible Personal Computer (PC) fitted with a monitor, Sound Card, a CD Rom drive and sufficient free storage space (hard disc).

25 Dependant upon the broadcasters we want to access we may also need a high speed telephone modem or a satellite receiver. This satellite receiver must have a suitable link with the computer, in order that the computer can select satellite channels and down-load their digital signals.

30 The commercial introduction of a Listener Operated Radio Programme Selection and Entertainment System should not cause any problems as many homes and offices contain most of these facilities already.

The key to utilise such PC as LORE-receiver would be a suitable software package.

35 It is obvious that the invention covers the use of purpose built LORE receivers too.

Even though the radio listener should be given as great a choice and flexibility in designing his own programme policy as possible, it is necessary to keep the operation simple.



The listener must primarily remain a listener and not become a producer or disc-jockey. It must be possible for him to access semi-finished programme packages as well as separate programme items which a more skilled LORE listener would prefer.

The listener should not be directly involved in the design of the actual programme schedule (running order). Despite the listener's freedom to select a programme policy by determining the selection of certain themes, and within reason the composition of such themes to a finished programme, the LORE contains an automated programme selection system which compiles inputs according to a policy without being provided with a schedule or distinctive information about the individual inputs.

The programme selector provided in application PCT/GB 91/01564 is able to compile items without having prior knowledge about the item itself, without a detailed programme schedule provided and without the item having specific characteristics such as pilot-tones, as the described programme selector contains "monitoring means which do not require any additional signal feedback from the music signal source to the controller of the system other than the actual recording of the music which is broadcast."

The LORE software is designed to be simple to operate. The LORE receiver displays easily understandable menus and help screens. The basic operational steps and screen menus will be described later with reference to the attached drawings.

Systems of highest digital compression must be used to minimise the down-load time, and thus reducing the usage cost of the communication network like the "Internet". Soon we can expect to be able to down-load a 60 minutes long programme within 7 minutes or even less.

However provisions must be made for automated down-loading at specified intervals because news based programmes need regular updating. The length of such intervals must be user-definable as, for example a stock-broker obviously needs more up to date information than a doctor.

As the down-loading may incur network usage charges, a less frequent down-loading interval may be preferred by private listeners whilst constant updates may be essential to commercial LORE users.

To reduce network usage time it is possible only to update certain items held in the receiver's memory. An hour long programme containing 70% music, 20% non-current talk, and 10% news bulletins needs only the news content updated at regular intervals; thus at a compression rate of 60:1 the network usage time during a complete replacement of the memory's news content would only take 42 seconds.

Facilities for automatic down-loading at preset times are also provided. Once the receiver is programmed it will compile and produce different programmes at different times of the day without the need for constant manual re-programming.

A typical daily policy could look like this:

5	early morning:	1960's & 70's pop with 20% news bulletins and weather
10	mid morning:	general soft pop music with news on the hour only and 30% women / family related talk-radio subjects
	afternoon:	chart music and 15% youth related talk for teenagers after school
15	early evening:	10% jazz music, 20% country music, 30% modern pop music with 20% news of the day and 20% science features
	late night:	100% soul music

Once the above policy is programmed, the LORE receiver will automatically down-load and compile new programmes daily, without the requirement for further manual adjustments.

Even though most listeners would prefer regular down-loading and updating it may not be necessary for some listeners to update more than once or twice per week. A listener preferring a narrow selection of music with non current information can leave his LORE without newly down-loaded updates as the receiver will continue to play-back its once down-loaded music and information in an ever changing order, as far as the policy and memory's content permits. It will therefore continue to provide interesting programmes too. Some of today's existing chart radio stations only work on libraries as small as 70 songs!

We will now describe the programming of a LORE receiver for a daily programme to be broadcast Mondays to Fridays from 09:00 -13:00. For this example we will access four different broadcasters via two networks of which only one network will allow interactive communication. Finally we want also to integrate a newly bought compact disc of our own into the programme.

We start to design our programme schedule by entering the programming screen on our LORE receiver's display. Via a keyboard and the display we will now communicate with the LORE programming menu:

Screen 1 will ask us how long this programme will be.

Keyboard data input: 4 hours.

5 A longer playback of this programme can be scheduled at a later stage, but the programme content will start to repeat itself after 4 hours.

Screen 1 question: How many music broadcasters do you want to access?

Keyboard data input: 3 (2 music broadcasters plus our own disc)

10 Screen 1 question: Input the proportional representation of each broadcaster's music input in relation to your programme.

Keyboard data input: Broadcaster 1: 40%  
Broadcaster 2: 40%  
15 Broadcaster 3: 20% (our own disc)

The LORE receiver will now calculate the approximate requirements of music to be down-loaded from each broadcaster.

The programme profile shall be

20 Music, Information, Music, Information, ..... Music, Information

Your hourly mixture would consist of approximately

15 Songs	=	50 minutes
15 Information inputs	=	10 minutes
25		-----
	Total	60 minutes

We will need therefore approximately 60 songs and 60 information inputs for our programme

30 As we want to cover 40% of our total music with material from Broadcaster 1, the LORE calculator determines that 80 minutes or 24 songs are required to be down-loaded and segregates its memory accordingly.

The LORE programmer will now display the music broadcaster's access directory, Screen 2.

35 Screen 2 question: Select Broadcaster 1 from this directory

Keyboard data input: Broadcaster 1 = Station ABC

Station ABC provides its programme via an interactive network. The LORE receiver dials now ABC's access number via the data-link, eg the Internet.

- 5 As we are using an interactive network we can now directly communicate with the broadcaster's library system, therefore a new screen (3) will be displayed by the receiver. We can now follow the diagram as displayed in Figure 1.

ABC provides Soul Music, Modern Pop and Classical Music.

Screen 3 question: *Select your type of music*

- 10 Keyboard data input: *Modern Pop music.*

Screen 3 question: *How much of this category do you want to download?*

We want to select 20% Modern Pop of our own choice from this broadcaster.

- 15 Keyboard data input: *20%*

The next screen prompts us to either accept the broadcaster's own programme choice or to select artists \ song titles from an alphabetical index, similar to a juke box.

- 20 Screen 4 question: *Do you want to compile your own selection of artists and song titles from ABC's alphabetical index or do you want to accept ABC's preset selection?*

Keyboard data input: *pre-selected*

- 25 The broadcaster may want to charge us for this selection, therefore we will be prompted by the screen.

Screen 4 question: *A subscription fee will be charged if you proceed. Do you want to authorise payment?*

- 30 Various Pay-As-You-Select Systems can be used, either through the use of decoders which will descramble an encrypted transmission or through payment by credit card or by authorisation through a personal identification (PIN) number, whereby each authorisation will be stored on the listener's customer account. An invoice will be sent monthly to the listener.
- 35

Station ABC in our example uses the last mentioned authorisation method.

Keyboard data input: *PIN number*

Screen 5 now shows us a list of artists and songs from which we can select. We could select individual songs if we programmed a schedule for a one off airplay only, but we want to listen to programmes from this policy daily and the daily repeat of a particular song may become boring. Therefore we will only select artists names such as Abba, Take That, Rolling Stones. During future automated down-loading we will be given a daily selection of music by those artists.

Once the reserved space in our receiver's memory is full we will be taken to Screen 6. Here we are asked if we want to hear the full length of each song or if we prefer an edited (shortened) version. If we prefer full length music we may be prompted for another authorisation for payment of fees.

The options for Pay-As-You-Select may be necessary for the broadcaster to comply with the relevant copyright regulations. As a down-loaded music database can be used over and over again, there is no need for the listener to regularly down-load music unlike traditional radio whereby each airplay is a one-off broadcast for which the broadcaster pays copyright fees. The LORE music selection procedure is more like a trip to a record shop where we purchase a music selection to keep.

After we have made our choice, the selected programme will be down-loaded into our receiver and we will see the display of Screen 3 again. We have selected only 20% of music from this broadcaster so far. To down-load the remaining 80% we want to select ABC's own selection of Modern Pop.

Screen 3 question: Select your type of music

Keyboard data input: Modern Pop music.

Screen 3 question: How much of this category do you want to down-load?

We want to access 80% Modern Pop from this broadcaster.

Keyboard data input: 80%

Screen 4 question: Do you want to compile your own selection of artists and song titles from ABC's alphabetical index or do you want to accept ABC's preset selection?

Keyboard data input: pre-selected

A selection will be prepared by ABC's library system

Screen 6 question: Do you want full length songs or edited versions? A fee is payable for full length versions.

After we have made our choice, the selected programme will be down-loaded into our receiver and the communication with this broadcaster (ABC) will now be terminated.

The display shows Screen 2 again:

- 5     Screen 2 question:     Select Broadcaster 2 from this directory

Keyboard data input:     Broadcaster 2 = Station DFG

- 10     Station DFG provides its programme via satellite. The LORE receiver is now connected to a satellite receiver. As we are using a one way broadcast-link we cannot directly communicate with this broadcaster's library system. Screen (3) will be displayed by the receiver. We can now follow the diagram as displayed in Figure 2.

DFG provides Funk Music, 60's Pop and Country Music.

- 15     Screen 3 question:     Select your type of music

Keyboard data input:     Country Music.

- 20     The LORE receiver tunes our satellite receiver to DFG's frequency which broadcasts country music. For every type of music a station provides it must use a separate channel on this satellite.

Screen 3 question:     How much of this category do you want to down-load?

We want to access 50% Country Music from this broadcaster.

Keyboard data input:     50%

- 25     The broadcaster may want to charge us for this selection, therefore we will be prompted by the screen.

Screen 4 question:     A subscription fee will be charged if you proceed. Do you want to authorise payment?

- 30     Various Pay-As-You-Select Systems can be used. In this case DFG sends an encrypted signal which will be descrambled by a Pay-As-You-Select decoder which is integrated into our LORE.

Keyboard data input:     authorise

- 35     The selected programme will be down-loaded into our receiver and we will see the display of Screen 3 again. We have selected only 50% of music from this broadcaster so far. To down-load the remaining 50% we will select 60's Pop.

- 40     Screen 3 question:     Select your type of music

Keyboard data input:     60's Pop Music.

The LORE receiver tunes our satellite receiver to DFG's frequency which broadcasts 60's Pop music.

Screen 3 question: *How much of this category do you want to down-load?*

5 We want to access 50% 60's Pop Music from this broadcaster.

Keyboard data input: 50%

Screen 4 question: *A subscription fee will be charged if you proceed. Do you want to authorise payment?*

10 Keyboard data input: authorise

The selected programme will be down-loaded into our receiver and the communication with this broadcaster (DFG) will now be terminated.

15 The music providers described here are special LORE Broadcasters. However future LORE receivers may be equipped with facilities to analyze and segregate traditional digital radio broadcasts in order to use their music output for LORE programming too.

The display shows Screen 2 again:

20 Screen 2 question: *Select Broadcaster 3 from this directory*

Keyboard data input: *Broadcaster 3 = our Compact Disc*

The screen prompts us to insert a disc in the LORE receiver's CD drive.

25 Our total music selection is now down-loaded.

30 We will now access the information providers' libraries. Normally we can consider news as public domain and freely accessible. However, the provider of news needs to receive some form of revenue. Pay-As-You-Select systems may be used by some broadcasters, similar to those described on the previous pages, while other broadcasters may want to finance their services by broadcasting commercials as part of their package.

35 Employment of decoders which can distinguish between commercials and non-commercial information through detection of subaudible digital signals are used in the following application. A listener can receive commercial-free speech inputs provided that a charge-card is inserted into his decoder which is attached to his LORE receiver.

40 A prompt for payment authorisation will be displayed on the programming screen.

5 Every information item must contain two subaudible pilot-tones. One at approximately 5 seconds before its end and one at its end. This is to guarantee safe playback in accordance with the Automated Radio Programming System PCT/GB 91/01564 which is integrated into the LORE receiver.

Our first information access programming screen will be Number 7.

Screen 7 question: *How many speech broadcasters do you want to access?*

10 Keyboard data input: 2

Screen 7 question: *Input the proportional representation of each broadcaster's information input in relation to your programme.*

15 Keyboard data input: Broadcaster 1: 60%  
Broadcaster 2: 40%

The LORE receiver will now calculate the approximate requirements of information to be down-loaded from each broadcaster.

20 As discussed on page 6, we will need approximately 60 information inputs for our programme. As we want to cover 60% of our total information with material from Broadcaster 1, the LORE calculator determines that 24 minutes or 36 inputs (at 45 seconds per input) are required to be down-loaded for our programme and segregates its memory accordingly.

The LORE programmer will now display the information broadcaster's access directory, Screen 8.

30 Screen 8 question: *Select Broadcaster 1 from this directory*

Keyboard data input: Broadcaster 1 = Station HIJ

Station HIJ provides its programme via an interactive network. The LORE receiver dials now HIJ's access number via the data-link, eg the Internet.

35 As we are using an interactive network we can now directly communicate with the broadcaster's library system, therefore a new screen (9) will be displayed by the receiver. We can now follow the diagram as displayed in Figure 3.

40 Screen 9 shows that HIJ provides Political News, Financial News, Local News for Town A, Local News for Town B and some Comedy.



Screen 9 question: How much of each listed category do you want to down-load?

Keyboard data input: 20% Political News,  
50% Financial News,  
0% Local News for Town A,  
5% Local News for Town B  
25% Comedy from this broadcaster.

10 The broadcaster holds a separate library for each information category. Each library is like a big bucket. The latest information will be placed on the top. The deeper the listener digs into the bucket the older the information will be. If you have just come from a holiday and you want to catch up with the news from the past weeks, you would instruct the LORE to dig very deeply into the bucket.

15 If you want to receive the very latest news only you would extract just the top pile. To receive the top pile throughout the programme it will be necessary to update the LORE receiver's memory at regular intervals.

20 We will define those intervals on Screen 10 to enable the LORE receiver to automatically access Broadcaster HIJ throughout the programme to update the receiver's memory.

Screen 10 question: How often do you want to update each category?

Keyboard data input: update -

25 - Political News twice during the programme,  
- Financial News twice during the programme,  
- Local News Town B once during the programme,  
- Comedy no update.

30 In relation to the total programme input needed, the LORE system will now dig for the initial down-loading:

- Political News 6.6 %  
1/3 of the total political content

35 - Financial News 16.6 %  
1/3 of the total financial content

- Local News Town B 2.5 %  
1/2 of the total local content

40 - Comedy 25 %  
the total comedy content

The remaining inputs will be down-loaded throughout the programme at the relevant intervals.

Before we can down-load the programme, Screen 11 will prompt us if we want to eliminate commercials. If so required we authorise the decoder and down-load.

5 Once the reserved space in our receiver's memory is full, the communication with this broadcaster (HIJ) will be terminated.

10 As we want to cover 40% of our total information with material from Broadcaster 2, the LORE calculator has already determined that 16 minutes or 24 inputs be down-loaded and has segregated its memory accordingly.

The LORE programmer will now display the information broadcaster's access directory, Screen 8.

Screen 8 question: Select Broadcaster 2 from this directory

15 Keyboard data input: Broadcaster 2 = Station KLM

20 Station KLM provides its programme via satellite. The LORE receiver is now connected to a satellite receiver's audio output. As we are using a one way broadcast link we cannot directly communicate with this broadcaster's library system. Screen (9) will be displayed by the receiver. We can continue following the diagram as displayed in Figure 3.

KLM broadcasts on 4 satellite channels providing on:

- channel 1 Political News,
- channel 2 Cultural News,
- 25 - channel 3 Local News for Town C,
- channel 4 a mixed package of chat and information

Screen 9 question: How much of each category do you want to down-load ?

30 Keyboard data input: 80% channel 4,  
20% channel 2,

35 This broadcaster cannot update sections of his programme, unlike the broadcaster in an interactive system. As each channel distributes an endless loop of information, any update would mean the complete replacement of the loop. To receive the latest information throughout the programme it will be necessary to update the LORE receiver's memory at regular intervals.

40 We will define those intervals on Screen 10 to enable the LORE receiver to automatically access Broadcaster KLM throughout the programme to update the receiver's memory.

Screen 10 question: How often do you want to update each category?

Keyboard data input: channel 4 once during the programme, channel 2 no update.

- 5 In relation to the total programme input needed (16 minutes), the LORE system will now prepare to down-load information items in excess of 6.4 minutes from channel 4 and 3.2 minutes from channel 2.
- 10 Before we can down-load the programme, Screen 11 will prompt us as to whether we want to eliminate commercials. If so required we can authorise the decoder and down-load.  
  
Once the reserved space in our receiver's memory is full, the communication with this broadcaster (KLM) will be terminated.
- 15
- Finally we will need to programme a weekly timetable on Screen 12 (Figure 4). We save this policy as programme A and tell our timetable when we would like to listen to this programme policy.
- 20 Timers integrated into the LORE receiver will from now on initiate the programmed down-loading procedure automatically prior to playback and will also update during playback the various information items according to the policy which we have just programmed.
- 25 The down-loaded programme items will now be compiled, selected and mixed, characterised in that the selection, compiling and further down-loading of items, energising or de-energising of sources and mixing, fading and crossfading of items is automatically initiated by the system in accordance with our preset programme policy through the combination of different sensing devices and calculators.
- 30
- The programming system according to PCT/GB 91/01564 allows music play-back only in the same running-order as originally compiled, unless the play-back source comprises random access facilities, as many compact disc players do.
- 35
- The down-loading / recording of music, as described in this application, generates also random mixtures. Random music play-back has a disadvantage as it can create great mood swings.
- 40
- Dependant upon the selection of music chosen, those mood swings can be more or less severe. For example, during a programme which contains a wide variety of different music types it could happen that loud Heavy Metal Music follows a soft classical piece.

Such extreme mood swings could be eliminated by carefully compiling the programme policy as described. However the design of a LORE system must allow for the fact that the user is not skilled in the art of radio programming.

- 5 Facilities are therefore provided to keep each type of music down-loaded in a separate memory. During playback the LORE receiver will select individual music inputs from each memory to get a suitable programme mix according to the programmed policy. The LORE receiver has default settings not to follow  
10 certain music styles with incompatible music styles. However despite this safeguard it is still possible that a very slow song follows a very fast one.

This problem can be overcome by providing the LORE receiver with additional information encrypted in the music as  
15 subaudible data. This data contains at least the following information -

- song rhythm: at beginning, end and overall;
- and whether the artist is male, female or whether it is a group.

- 20 Default settings will prevent the LORE receiver from mixing incompatible songs provided that such data is available as not all broadcasters may transmit it.

Programmes with a mixture of music with and without such data will be compiled in such a way that, as far as possible,  
25 unmarked songs will be played before or after songs with medium rhythm.

Digital recordings usually contain subaudible signals indicating the remaining time to be played. The LORE receiver will utilise these timing commands if available for  
30 fading music, according to application PCT/GB 91/01564:

" The main purpose of the Music Control Board is to monitor the music / entertainment source. There are different possibilities (modes) to monitor the song.

- It can be done either  
35 - through monitoring the volume level of the recording  
- or by an external controller (e.g. a database of the song's duration in connection with a timer);

The monitor will signal twice:  
40 - Once at the 50 % Volume Stage, which indicates the forthcoming end of the song (approximately 7 seconds before the end of a song)  
- Once at the 100 % Reduced Volume Stage, which indicates the actual end of a song.

- These stages are either  
45 - automatically set by the Volume Level Indicators  
- or set by the external controller "

The LORE receiver will automatically switch to Volume Level Control Mode, should the LORE receiver not be able to locate such timing commands on the recording.

5 Some broadcasters may want to integrate additional information on their broadcast. For example the artist, song title, record label and release date can be encrypted in the digital information of a song's signal. The LORE receiver provides facilities to display such information on its monitor.

10 Information items and music once down-loaded for the compilation of one programme can also be used for the compilation of other programmes.

A listener who likes to be a disc-jockey may produce parts of his radio's speech input himself.

15 The play-back time of each programme can be extended indefinitely, however, programme items may be repeated.

Even though this invention relates to a Listener Operated Radio Programme Selection and Entertainment System the same principle can be applied to a Viewer Operated Television Programme Selection and Entertainment System.

20

#### COMMERCIAL APPLICATION OF THE INVENTION:

The use of interactive networks will allow fringe providers to access wide audiences. For example most local newspapers cannot afford to run their own radio station as the larger networks already entertain a substantial group of their target audience. The use of LORE will however allow the local broadcaster to provide an input in the programme of their target audience's radio without the need to compete with the networks.

25

30 Expatriates can also integrate their home country news into their radio programme without compromising on local news of the area where they live.

Independent record labels who have difficulties in receiving airtime on conventional radio can now directly approach the listener by offering subscription free music as part of their radio programme.

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The wider use of LORE will undoubtedly reduce record sales in the shops and the down-loading of music via digital networks may even completely replace the traditional purchase of music.

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LISTENER OPERATED RADIO PROGRAMME SELECTION AND  
ENTERTAINMENT SYSTEM

CLAIMS

I claim as follows:

- 5        1        A Listener Operated Radio Programme Selection and  
Entertainment System which is able to select and mix  
different programme items such as music and information  
10       inputs, comprising of electronic sound libraries, individual  
radio receivers and automated programme selection systems  
which are connected by means of a data link, characterised in  
that facilities are provided for each individual radio  
listener of a group of listeners to compile speech,  
information and music items by accessing different  
15       broadcasters' libraries, down-loading the required items into  
a personal receiver and automatically processing those single  
items after transmission in order to play-back an individual  
radio programme.
- 20       2        A Listener Operated Radio Programme Selection and  
Entertainment System as claimed in Claim 1 wherein visual  
displays are provided for menus and help screens as well as  
facilities to display additional information which is  
broadcast alongside the actual audible signal of a broadcast  
item.
- 25       3        A Listener Operated Radio Programme Selection and  
Entertainment System as claimed in Claim 1 wherein means are  
provided for automated down-loading of programme items at  
user-definable intervals.
- 30       4        A Listener Operated Radio Programme Selection and  
Entertainment System as claimed in Claim 1 wherein means are  
provided for integration of the listener's own broadcast  
material such as a compact disc or his own announcements.
- 35       5        A Listener Operated Radio Programme Selection and  
Entertainment System as claimed in Claim 1 wherein various  
Pay-As-You-Select Systems are integrated including decoders  
which can distinguish between commercials and non-commercial  
information allowing commercials to be eliminated from the  
programme upon the payment of a fee.
- 40       6        A Listener Operated Radio Programme Selection and  
Entertainment System as claimed in Claim 1 wherein  
calculators and sensing devices are integrated to select,  
quantify, down-load and compile programme items in order to  
produce a programme output in line with the prescribed  
programme policy as determined by the listener.



Application No: GB 9522544.7  
Claims searched: 1-6

Examiner: Mr B J Spear  
Date of search: 21 January 1997

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4R (RSX)

Int Cl (Ed.6): H04H 7/00

Other: Online: WPI

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2299200A (MU-6 Systems)	-
A	WO93/05594A1 (Garten)	-
A	US4862159 (Audio Technology)	-

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the filing date of this invention.

E Patent document published on or after, but with priority date earlier than, the filing date of this application.

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